

Controllers

User's manual ST-280

EN

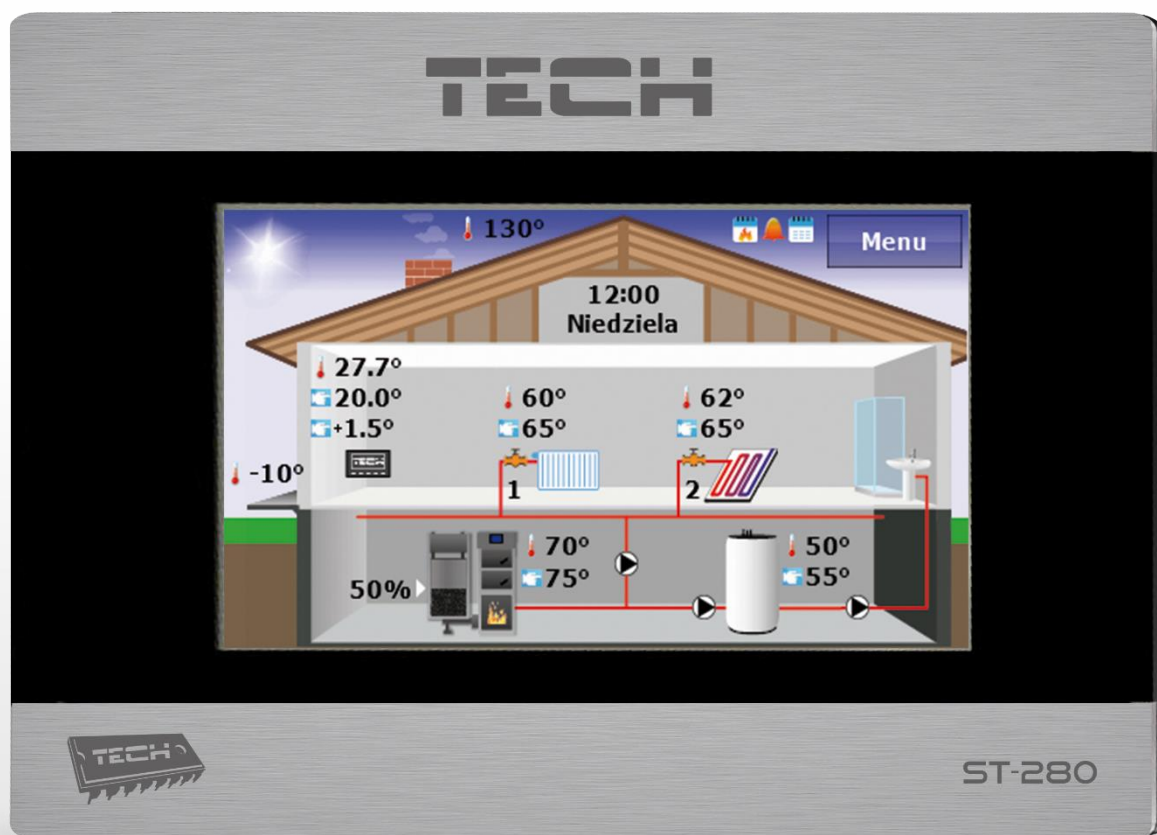


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I. Safety

Please read the following regulations carefully before using the device. Failure to comply with these instructions may cause injuries and damage to the device. This instruction booklet should be carefully stored.

To avoid unnecessary errors and accidents, ensure that all people who use this device become familiar with its operation and safety functions. Please keep these instructions and make sure that they accompany the device in the case of its transfer or sale, so that any user during the period of its use will have the appropriate information and instruction on device operation and safety. For safety of life and property follow precautions consistent with those listed in the operating manual, as the manufacturer shall not be held liable for damage caused by negligence.



WARNING

- **Live electrical device.** Before any activities related to power supply (connecting wires, device installation, etc.) you must ensure that the regulator is not connected to the electrical grid.
- Installation should be carried out by a person with the appropriate electrical authorizations.
- You must measure the resistance of electrical motors earthing and resistance of electrical wires insulation before activating the controller.
- The regulator is not intended for operation by children.



NOTE

- Atmospheric discharges may damage the controller, therefore during storms it is necessary to disconnect the device from the electrical grid by pulling out the power plug.
- The controller must be used in accordance with its intended purpose.
- Please check the technical condition of wires before and throughout the heating season. Fastening of the controller should be also checked, and any dust and dirt should be cleaned.

II. Device Description

Application of the ST-280 room regulator provides convenient steering and control of room temperature, boiler, tank and mixing valves directly from home without the need to go down to the boiler room. The controller is adapted to cooperate with various kinds of main controllers equipped with RS communication: standard controllers, pellet controllers (equipped with ignition switch) and installation controllers.

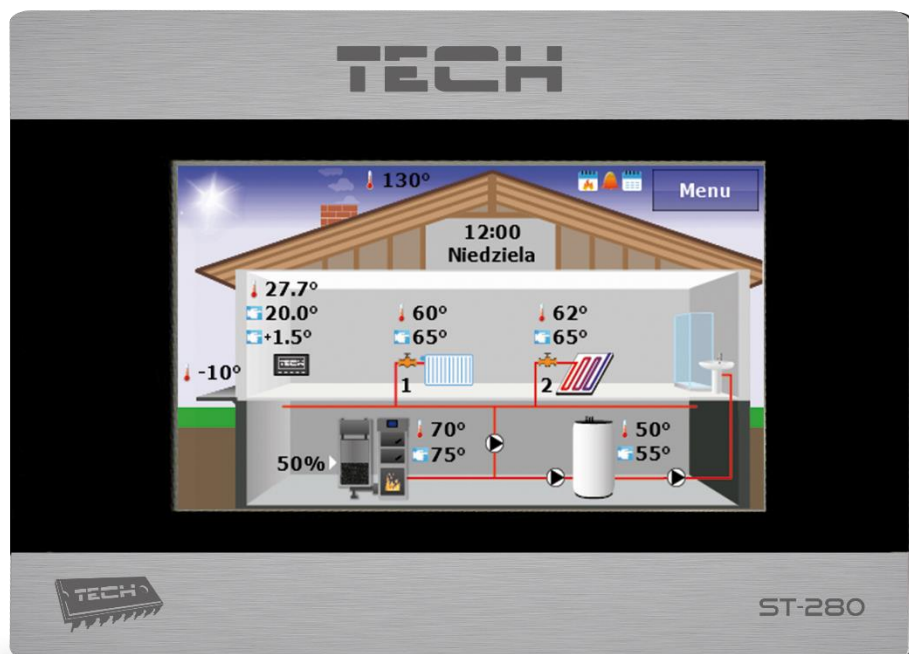
Its large, legible, colourful touch-screen display allows for convenient operation of the regulator and modulation of its parameters. An additional advantage is the possibility to load photos to the controller's memory which will be displayed as a screensaver.

The ST-280 room regulator enables:

- Control of room temperature
- Control of the CH pump temperature
- Control of the DHW temperature
- Control of the mixing valves temperature (available in cooperation with an additional valve module)
- View of external temperature
- Weekly heating program
- Alarm clock
- Parental lock
- Display of current boiler temperature and room temperature

Controller equipment:

- Large, legible, colourful, touch-screen display
- Built-in room sensor
- RS communication cable for boiler controller
- RS wireless communication module – ST-260 (additional option)



III. Installation of the Controller

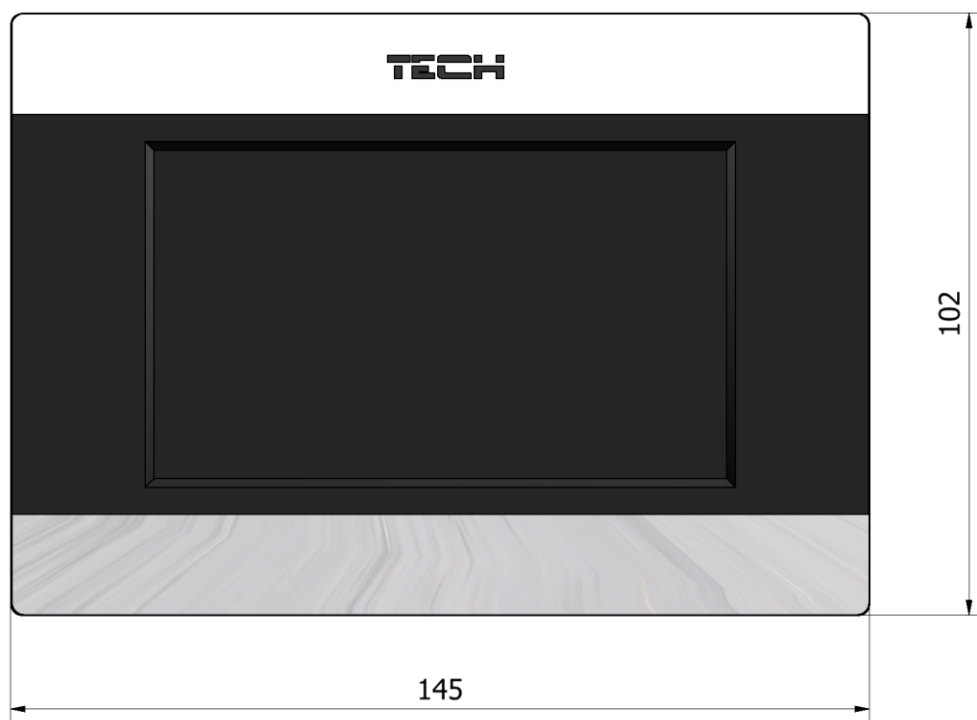
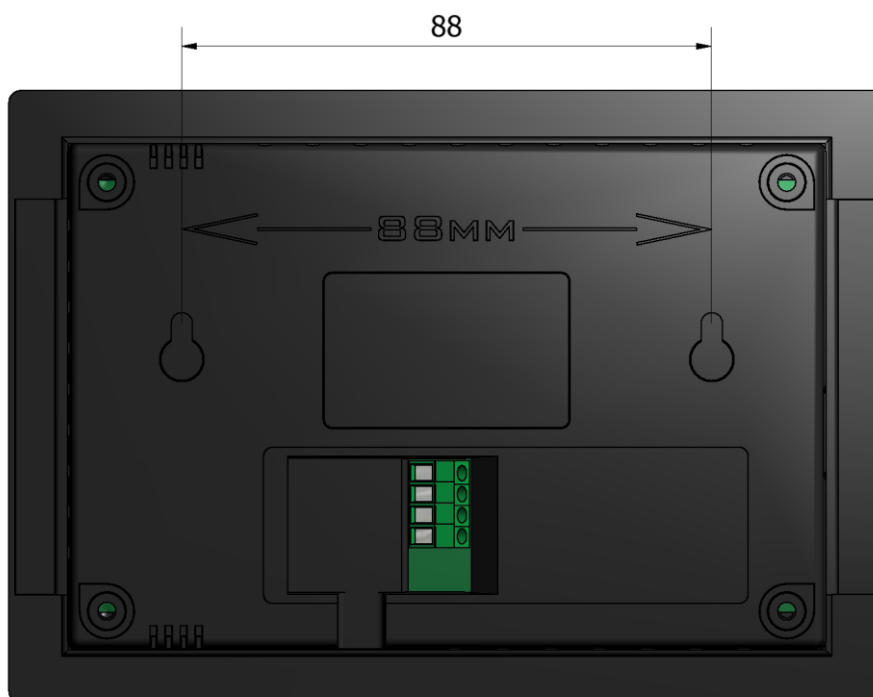
The controller should be installed by a person with the relevant qualifications.



WARNING

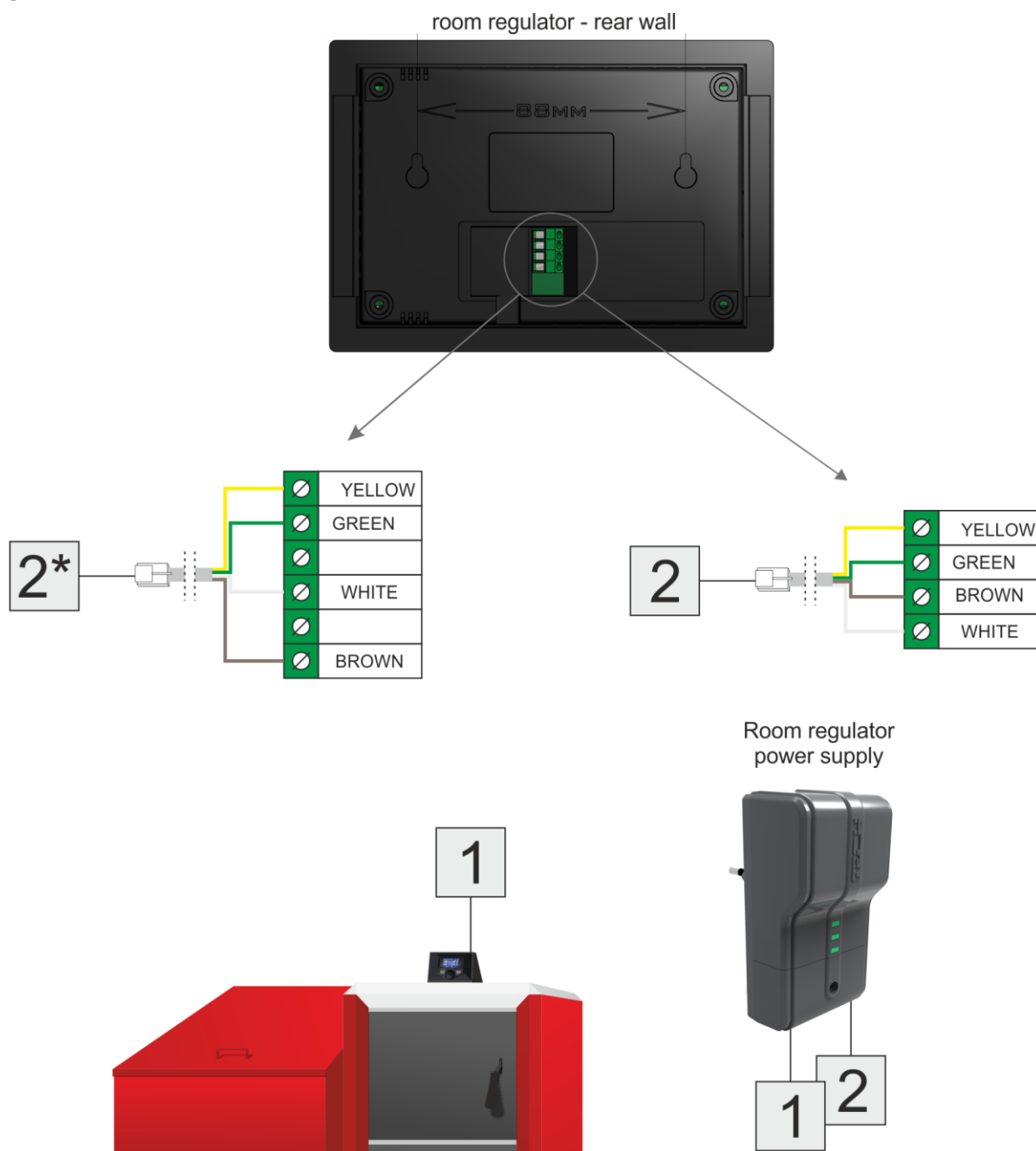
There is a danger of fatal electrical shock from touching live connections. You must disconnect the electrical connection and protect against accidental connection before working with the regulator.

The ST-280 regulator is intended for installation on the wall.



Scheme of connections – Wire Connection:

The ST-280 room regulator, along with the main controller, should be connected with a four-wired cable according to the scheme below:

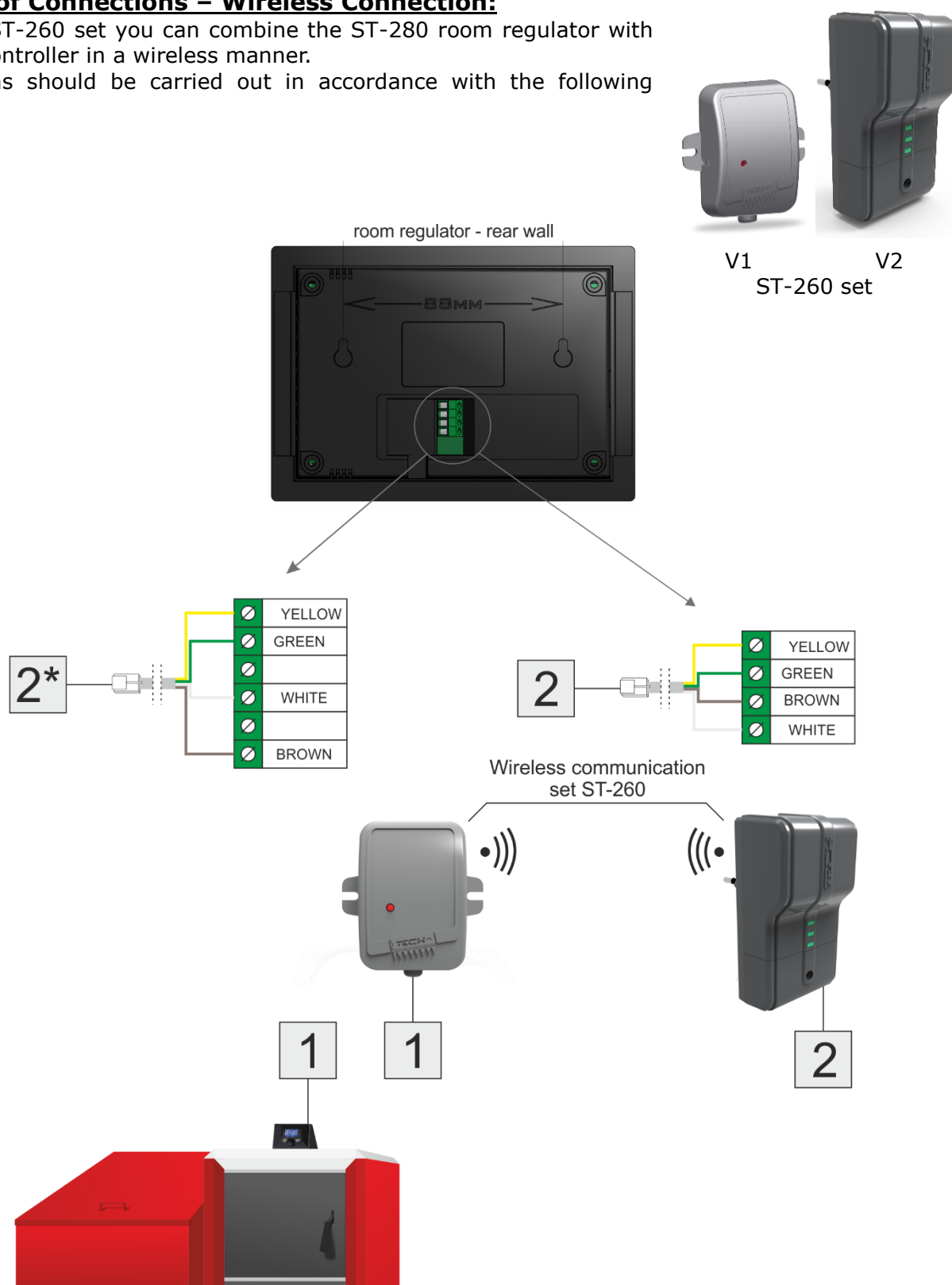


The four-wired cable is connected to the regulator inputs in accordance with colours of wires. The cable is then connected to RJ12 connector which you should plug into the regulator power supply – the place of connection is marked on the scheme as point 2 (there is additional description on the power supply). The regulator power supply should be connected to the controller on the boiler by means of a 4-wired cable connected on both sides to the RJ12 connector – marked on the connection scheme as point 1.

Scheme of Connections – Wireless Connection:

Using the ST-260 set you can combine the ST-280 room regulator with the main controller in a wireless manner.

Connections should be carried out in accordance with the following scheme:



The four-wired cable is connected to the regulator connector in accordance with colours of wires. This cable is then connected to the RJ12 connector and should be plugged into the v2 module – the place of connection is marked on the scheme as point 2 (there is an additional description on the module). The controller on the boiler should be connected to the v1 module by means of a 4-wired cable, and connected at the other end to the RJ12 connector - on the connection scheme this is marked as point 1.

* Optionally, a vertical-6-connector may be used instead.

IV. Operation of the Controller

IVa) Operating Principle

The room regulator sends a signal on additional heating or underheating to the main controller. Depending on the specific settings, the signal for additional heating of rooms may e.g.: switch off the CH pump, reduce the set temperature of the boiler by the set one (settings can be adjusted with the main controller). The room regulator also enables change of some settings within the main controller e.g.: ability to change and set the temperature of the boiler, pump operation modes, etc.

IVb) Main Screen Description

The controller is equipped with a large touch-screen display. The main screen displays the current state of basic parameters for the boiler.

Depending on the user's settings, the screen may display a visible installation screen or the panels screen. Data which is displayed on the main screen of the room regulator depends on settings of the main controller and its type.

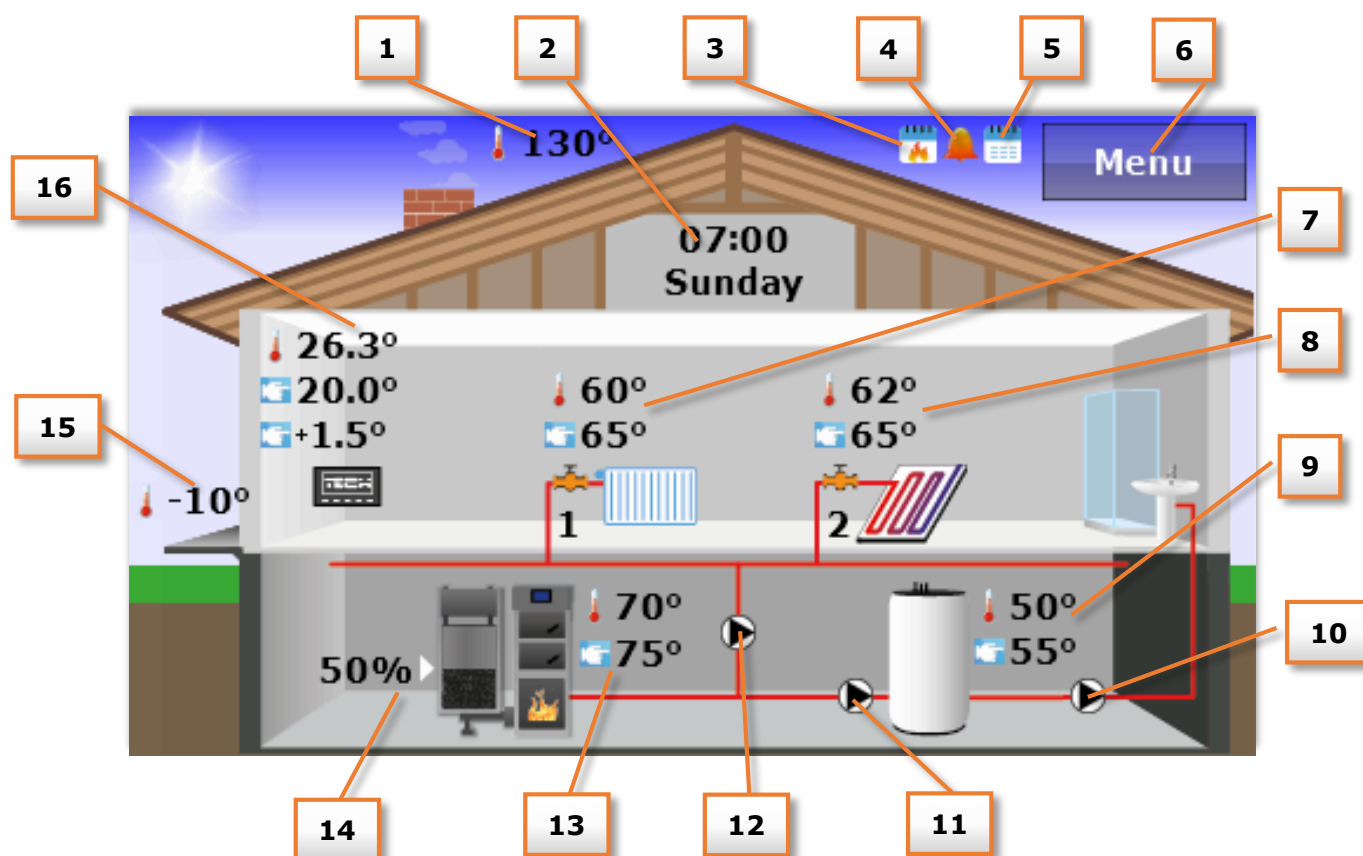
! NOTE

Each change of the set temperatures, time or other settings on the room regulator or boiler controller introduces a new setting in both devices.

! NOTE

Factory settings show the main screen as the installation screen which the user may change on the panels screen.

Main Screen Description – Installation Screen:



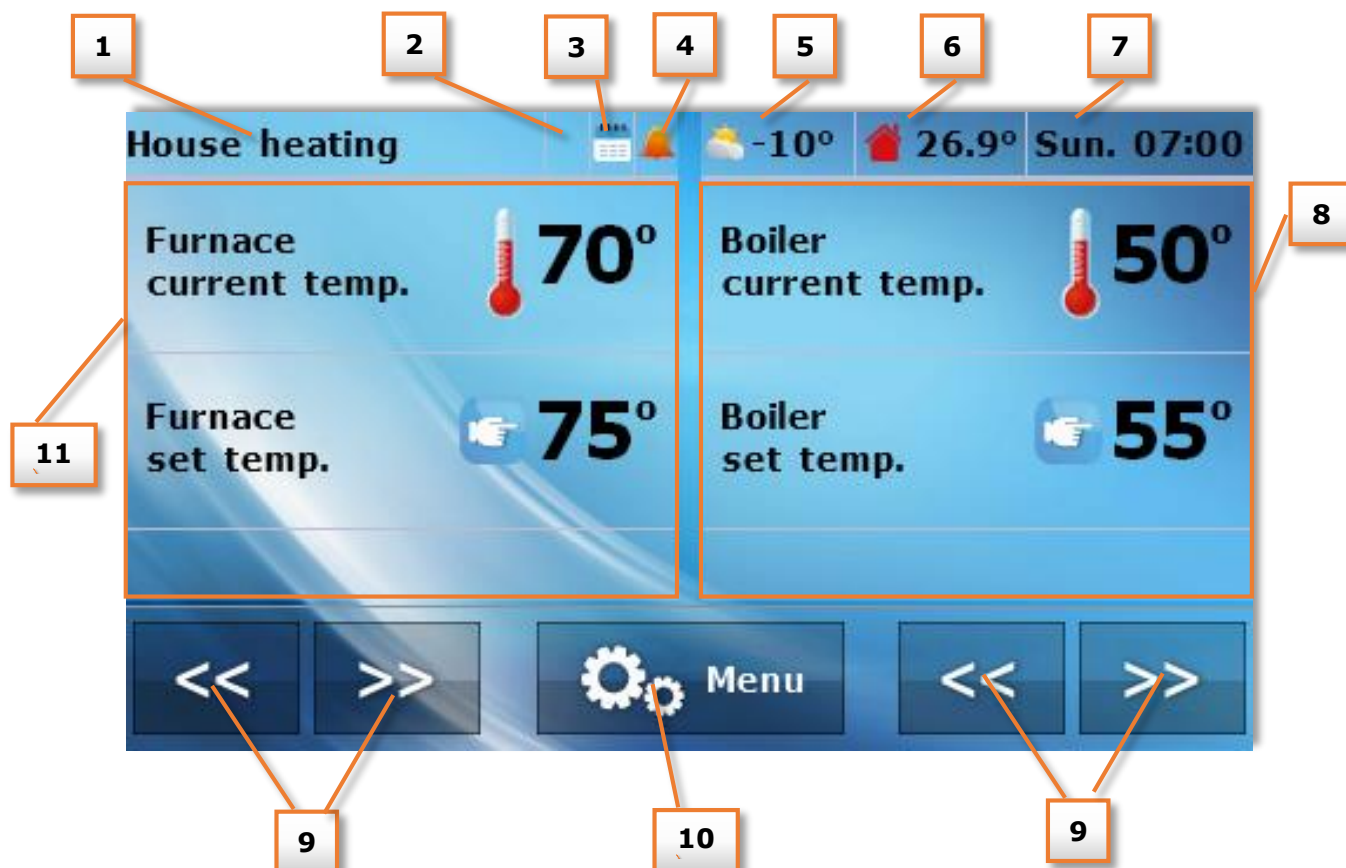
1. Temperature of smoke (visible only when using the smoke sensor on the main controller).
2. Current time and date – clicking the screen in this area will switch you to the Time menu which enables you to introduce changes to the current time and date.
3. Icon which signals activated options concerning daily boiler operations (only in the case of the pellet type boiler).
4. Icon which signals an activated alarm clock.
5. Icon which signals an activated weekly control.
6. Access to the controller menu.
7. Valve 1 temperature: current and set - clicking the screen in this area will switch you to the menu which enables you to introduce changes to the set temperature of valve 1.
8. Valve 2 temperature: current and set - clicking the screen in this area will switch you to the menu which enables you to introduce changes to the set temperature of valve 2.

**NOTE**

Data concerning the valve must be loaded and registered in order to be displayed on the main screen of the room regulator on the main controller (in the case of external modules of the valve, e.g.: the ST-431N). In the circumstance of the valve not being installed, the room regulator will display an "!" icon.

9. Boiler 1 temperature: current and set - clicking the screen in this area will switch you to the menu which enables you to introduce changes to the set temperature of the boiler.
10. Icon which signals circulation pump – animation which displays current pump operation.
11. Icon which signals HUW pump - animation which displays current pump operation.
12. Icon which signals CH pump - animation which displays current pump operation.
13. Boiler temperature – current and set. If the third temperature value is displayed it means that weekly control is activated and this value indicates the current adjustment of the set temperature of the boiler. Clicking the screen in this area will switch you to the menu which enables you to change the set temperature of the boiler.
14. The current level of fuel in the feeder.
15. External temperature (visible only when using the external sensor in the main controller).
16. Room temperature – current and set. If the third temperature value is displayed it means that weekly control is activated and this value indicates the current adjustment of the set room temperature. Clicking the screen in this area will switch you to the menu which enables you to change the set room temperature.

Main Screen Description – Panels Screen:



1. Active operation mode of pumps
2. Icon which shows enabled options concerning daily boiler operations (only in the case of the pellet type boiler).
3. Icon which shows an enabled weekly control option.
4. Icon which shows an activated alarm clock.
5. External temperature (visible only when using the external sensor on the main controller).
6. Current room temperature.
7. Current time and date.
8. Right parameters panel.
9. Buttons allowing change of active view of parameters panel.
10. Access to the controller menu.
11. Left parameters panel.

With the use of buttons allowing change of active view of parameters panels, the user obtains access to additional information on the installation condition:

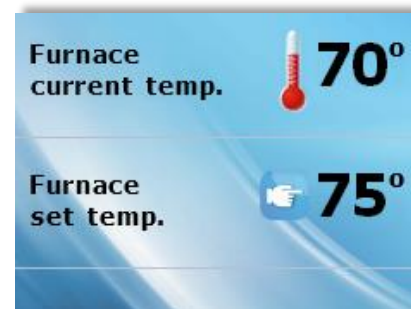
- Room temperature panel

View of current temperature and the set temperature inside the room - after clicking on this panel it is possible to change the set room temperature:



- Boiler temperature panel

View of current temperature and the set temperature of the boiler - after clicking on this panel it is possible to change the set temperature of the boiler.



- Boiler temperature panel

View of the current temperature and the set temperature of the boiler - after clicking on this panel it is possible to change the set temperature of the boiler.



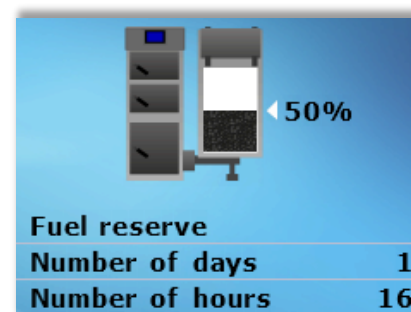
- Valves data panel

View of the current temperature and set temperature of valve 1, 2, 3 or 4 - after clicking on this panel it is possible to change the set temperature of the selected valve.



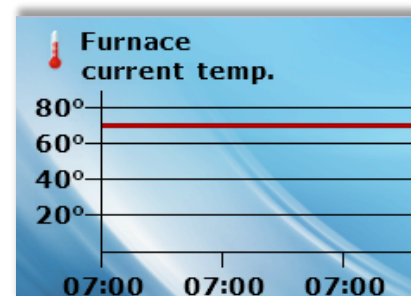
- Fuel level panel

View of the fuel level in the boiler (this mode is only active when selected by the user with the boiler controller).



- Charts panel

Current temperature chart: boiler, tank or inside the room - graphically presents temperature changes in time



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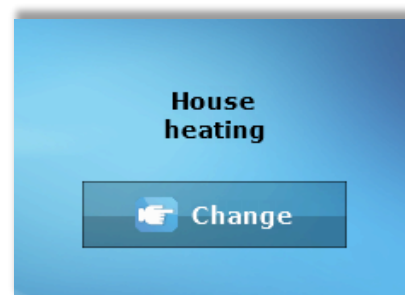
- Pellet boiler change phase panel

This sub menu allows the user to enable or disable the boiler. This option is only unavailable during daily boiler operations, which fall under temporary operation settings.



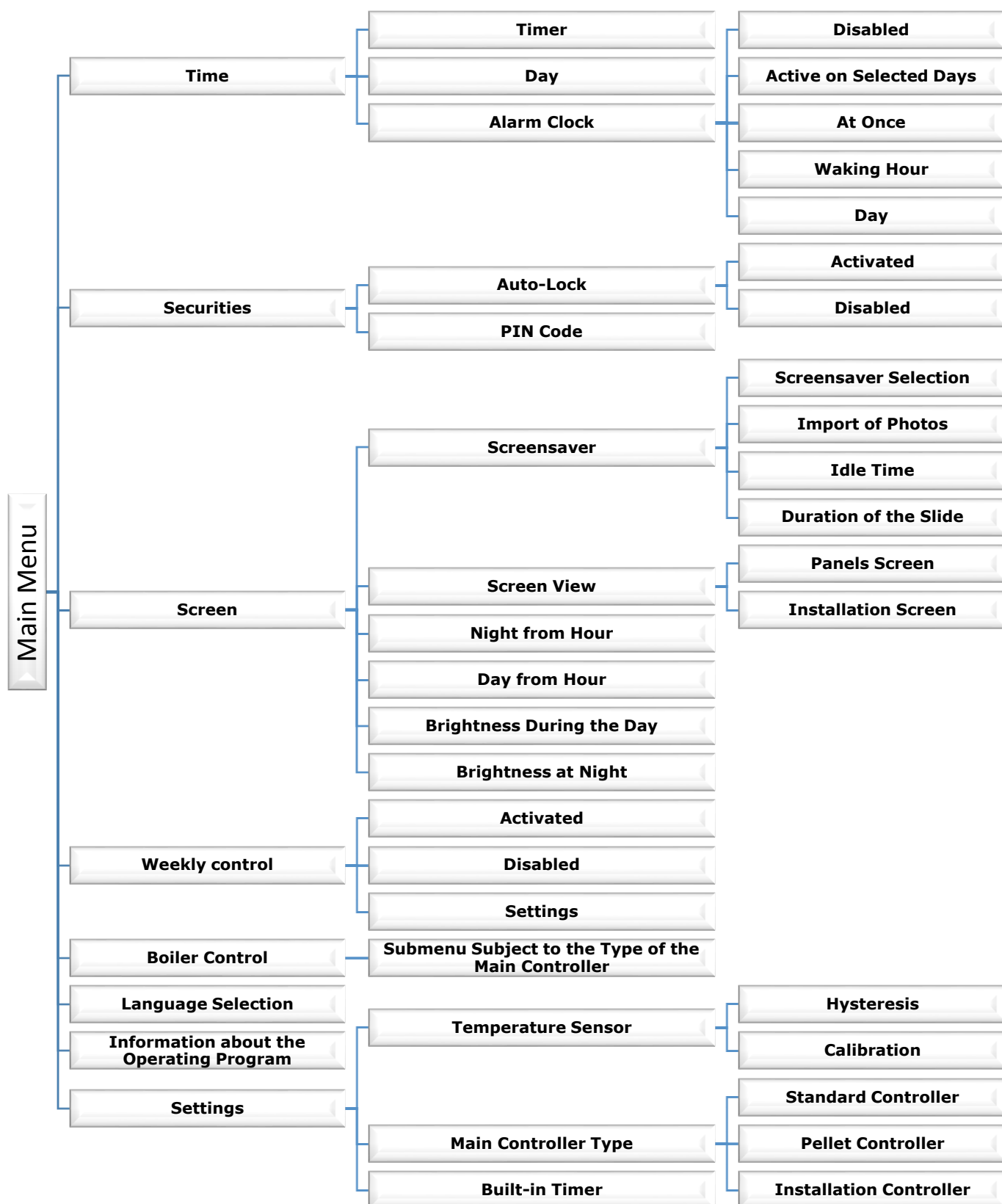
- Pump operation mode-change panel

View of the operation mode – shows the active pumps operation mode (active view only in the case of the pellet type boiler) – after clicking on this panel it is possible to change the pumps operation mode. A selection can be made from among the following modes: Home heating, Priority, parallel pumps, summer mode with additional heating and summer mode without additional heating. Detailed description of pumps operation modes can be found in the operation manual of the boiler controller.



V. Controller Functions – Menu Options

During normal operation of the regulator, the devices home page is visible on the **graphic display**. After clicking on the menu the user is switched to that particular controller function.



VI.a) Time

After clicking on the Time icon on the main menu you will see the panel used for changing timer settings, current date and alarm clock settings.

Timer

This function allows the user to set the current time, according to which the regulator will then operate.



Date

This function allows the user to set the current date, according to which the regulator will then operate.



Alarm clock

This function allows the user to set the alarm clock. There is an option to set the alarm clock so that it will activate only on selected days (active on selected days) or whether it will activate once each time.



- waking hour can be set by means of using the "up" and "down" arrows.



- when the alarm clock is to be active only on selected days, the user must select the days on which the alarm clock is to be activated.



Controller screen view at the time of activation of the alarm clock.



VI.b) Securities

After clicking on the Securities icon on the main menu you will see the panel used for changing settings of the parental lock.



Auto-Lock

After clicking on the Auto-lock icon you will see the panel used for switching the parental lock on or off.



PIN Code

In order to set the PIN code (necessary for regulator operation when the lock is active - you must click PIN code icon



! NOTE

The factory set PIN code is "0000".

VI.c) Screen

After clicking on the *Screen* icon on the main menu you will see the panel used for changing the screen settings.

Screensaver

On the controller, it is possible to set the screensaver which will activate after a fixed idle time. In order to return to the main screen view it is enough to touch any place on the screen. The user may adjust the screen view during the screen time-out by setting particular parameters:

- Screensaver selection

By clicking selection of the screensaver you switch to the panel which enables you to turn off the screensaver option (No screensaver), or set the screensaver in the form of:

-slideshow – (activation of this option is possible only after prior activation of the photos import option). Photos are displayed on the screen with a frequency set by the user.

-Timer – visible on the screen.

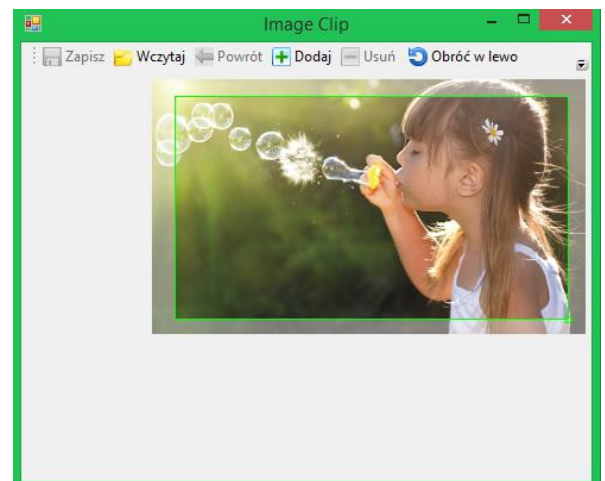
Time-out – after expiration of the set idle time, the screen will switch to stand-by function.

- Import of Photos

Any photos you want to import to the controller's memory must be first prepared by means of using the ImageClip program (download from www.techsterowniki.pl).

After installation and starting up the program on a PC, you will be able to load your selected photos. You can also select the area of the photos to be displayed on the controller screen. You can turn photos. After processing the selected photos, the program will load them. After preparation of all the photos you want to load to the controller, save them on a USB stick in the main menu. Insert the USB stick into the USB port on the controller and launch the photos Import option on the controller menu.

You can load up to 8 photos at any one time. Loading new photos automatically into the controller memory will remove previous photos



Screenshot of the photo-editing program intended for ST-282 controller

- Idle Time

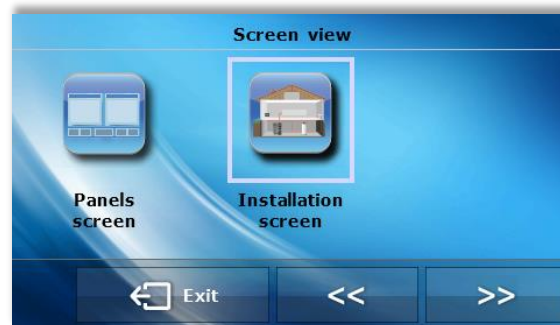
This function enables you to set the time after which the screensaver will activate.

- Duration of the Slide

This option enables you to set the frequency with which photos will be changed if the slideshow is activated.

Screen View

After clicking on the screen view icon the user has the ability to set the appearance of the main screen. By default it is set to the pre-installed screen, but you can also set the panel screen.



Night from hour/Day from hour

In further sub-menus of the screen menu you can decide which hours the controller will switch to the night mode (Night from hour) as well as return to the day mode (Day from hour).

Brightness during the day/brightness at night

After clicking on the icon, the user may set the percentage value of the screen brightness during the day and at night.

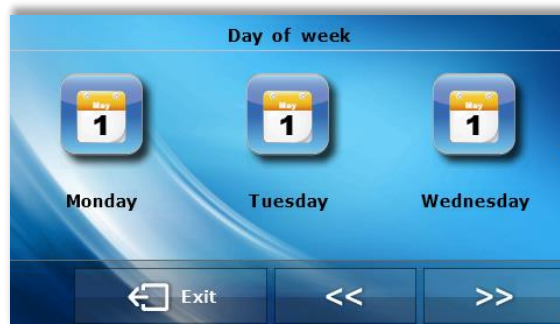
VI.d) Weekly Control

This function allows you to change the set temperature of the room in a day-night cycle.


You can set each day you can set the device to change to a specific temperature at any hour on the main set value in a 24 hour day-night cycle.

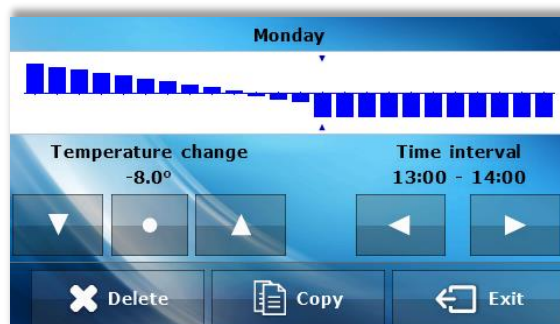


First select the day on which time deviations will be set – for this option click on the Settings icon and then select the day for which you want to set the temperature.



After selecting the day, you will see the panel for setting temperature deviations within selected time intervals.

To facilitate this, you can copy the set deviation for subsequent hours – just click on the symbol  on the selected value and by means of the arrows copy selected settings for subsequent hours.



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By clicking on the *Copy* icon you can copy the settings of any whole day for the subsequent days.

Weekly setting of the set temperatures reduces heating costs and provides the desired level of thermal comfort throughout the whole day. The parameter which determines the correct operation of this function is the current time and day settings.



VI.e) Boiler Control

The parameters of this submenu depend on the main controller type.

Submenu for Standard Controller:

- Set temperature

After clicking on this icon you can change the value of set temperature on the boiler (you can do this by clicking on 'view of parameters' from the starting screen).

- Operation modes

After clicking on this icon, you can easily change the pumps operation mode (in the boiler controller) between: Home heating, Priority, parallel pumps, summer mode. More detailed descriptions of these operating modes can be found in the operation manual for the boiler controller.

Submenu for the pellet controller:

- Set temperature

After clicking on this icon you can change the value of the set temperature on the boiler (you can do this by clicking on 'view of parameters' from the starting screen).

- Lighting

By clicking on this icon you will activate the process of lightning the boiler.

- Extinguishing

By clicking on this icon you will activated the process of extinguishing the boiler.

- Operating mode

After clicking on this icon, you can easily change the pumps operation mode (on the boiler controller) between: Home heating, Priority, parallel pumps, summer mode. More detailed descriptions of these operating modes can be found in the operation manual for the boiler controller.

- Boiler daily operation

By clicking on this icon you can set the daily schedule of the boiler operations:



Temporary operation – after marking this icon the boiler will operate only at the set hours

Continuous operation - after marking this icon the boiler will operate continuously



Settings – after clicking on this icon you can set the boiler operations in detail:



-Selection of the mode.

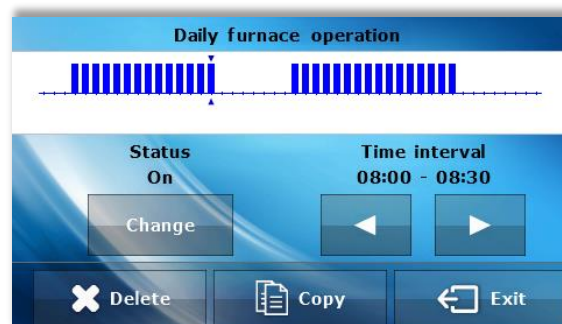
After selection of the operation hours only setting, the boiler will switch on and off according to the schedule set by the user.

When selecting the operation hours and room temperature, the boiler will switch on in accordance of the current temperature inside the room and in accordance with the schedule of the boilers daily operations. The current temperature inside the room is the priority for boiler under operation in this mode – if the temperature in the room falls below the threshold temperature (determined by the user) the boiler will be switched on even if the schedule states otherwise.



-Operating hours

After clicking on this icon you can set on which hours the boiler must be switched on and off (30-minute time intervals).



-Room temperature switch on

After clicking on this icon, you will see the panel with which you can set the threshold temperature in the room – if the temperature in the room falls below the set value the boiler will switch on independently of the set temporary schedule.

-Room temperature switch off

After clicking on this icon, you will see the panel with which you can set the threshold temperature in the room – if temperature in the room goes up above the set value the boiler will switch off independently of the set temporary schedule.

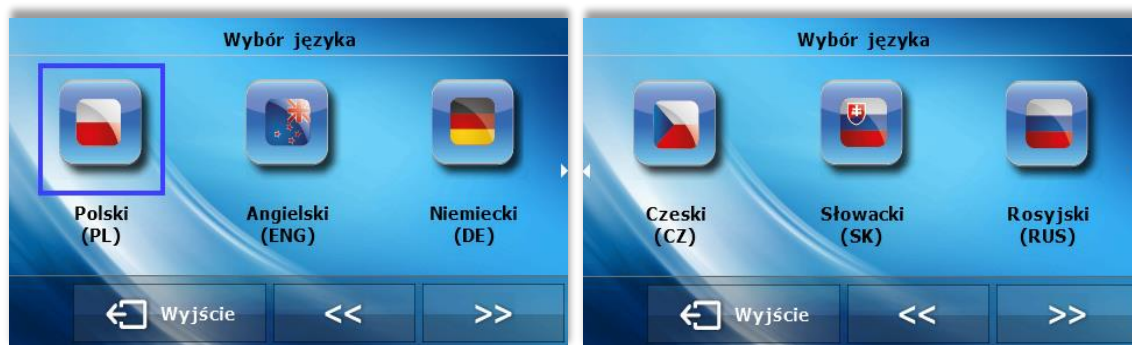
Submenu for the Installation Controller:

- Operating modes

After clicking on this icon, you can easily change the pumps operation mode (with the boiler controller) between: Home heating, Priority, parallel pumps, summer mode. A more detailed description of these operating modes can be found in the operation manual for the boiler controller.

VI.f) Language Selection

After clicking on the *Language selection* icon on the main menu you will see the panel used for changing the language for the user.



VI.g) Information about the Operating Program

By clicking on this icon the display will show the boiler manufacturer's logo along with the software version.

VI.h) Settings

After clicking on this icon you can change additional parameters.

Temperature Sensor

After clicking on this icon, you can see the panel which allows the user to change the hysteresis settings and calibration of the temperature sensor of the room regulator.

- Hysteresis

Hysteresis introduces tolerance for the set temperature preventing unwanted oscillations under minimal temperature fluctuations ($0 \div 10^{\circ}\text{C}$) with accuracy to 0.1°C . Example: when the set temperature constitutes 23°C and hysteresis is set to 1°C , the room regulator will begin to indicate under heating in the room after the temperature falls to 22°C

- Calibration

Calibration of the device is set during the installation. It can additionally be set after a longer period of



use of the regulator - if the room temperature measured by the internal sensor differs from the current temperature. The regulation range is as follows: -10 to + 10 °C with accuracy to 0,1°C

Main Controller Type

After clicking on this icon, the user selects the main controller type with which room regulator will cooperate: standard, pellet or installation. After the selection is made, the *Boiler control* submenu will be changed.

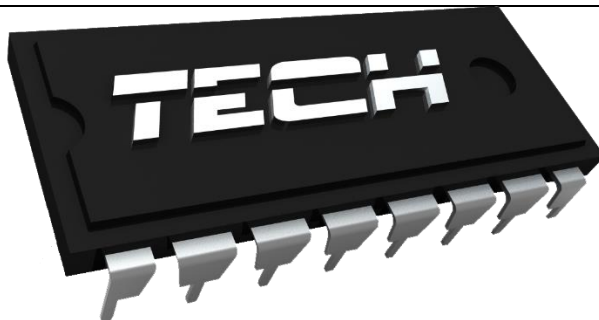
I. Alarms

The ST-280 room temperature regulator will signal all alarms generated by the main controller. When the alarm activates, the room regulator will send sound signals and the display will show the same message as the boiler controller. In the case of internal sensor damage "room temperature sensor fault" will appear.



Technical data

Room temperature settings range	5°C - 40°C
Power supply voltage	5 V/DC
Power consumption	1.3 W
Room temperature measurement error	+/- 0,1°C
Operating temperature	5°C - 50°C



Declaration of conformity no. 56/2012

TECH company with its registered office in Wieprz 1047A, 34-122 Wieprz, with full liability declares that the manufactured ST-280,230 V, 50 Hz thermo regulator complies with requirements of the Regulation of the Minister of Economy, Labour and Social Policy (Journal of Laws no. 155, item 1089) of 21st August 2007, implementing provisions of Low-Voltage Directive **(LVD) 2006/95/EC**, the Act of 13th April 2007 on Electromagnetic Compatibility (Official Journal 07.82.556) implementing provisions of Directive **(EMC) 2004/108/EC** and the Regulation of the Minister of Economy of 8th May 2013 "on the basic requirements concerning restrictions of usage some hazardous substances in electrical and electronic equipment" implementing provisions of **ROHS Directive 2011/65/EC**.

For conformity assessment harmonized standards were used **PN-EN 60730-2-9: 2011, PN-EN 60730-1:2012**.

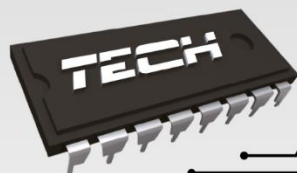
The product was **CE-marked** 03-2012

 PAWEŁ JURA	 JANUSZ MASTER
<small>WŁAŚCICIELE TECH SP.J.</small>	

Wieprz, 21. V 2015



Care for the natural environment is of primary importance for us. We are aware of the fact that we manufacture electronic devices and it obligates us to dispose used elements and electronic equipment in a manner which is safe for the nature. As a result, the company received a registry number assigned by the Chief Inspector of Environmental Protection. The symbol of a crossed out disposal bin on the product means that the product must not be thrown out to general waste bins. By segregating waste intended for recycling, we help to protect the natural environment. It is the user's responsibility to transfer waste equipment to the selected collection point for the recycling of waste generated from electrical and electronic equipment.



Controllers

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